

REMARKS

Claims 1-2, 5-8 and 10-19 are pending. Claims 1, 8 and 13 have been amended. Support for amended claims 1 and 13 is found in the published application, for example, at Paragraphs [0068]-[0075]. Claim 8 is amended to correct the alternative language in the claim. No new matter has been added.

Provisional Double Patenting rejection (Office Action p. 2)

Claims 1, 5, 7, 8 and 10-19 are provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claim 13 of copending Application No. 10/591,706 (the ‘706 Application).

The present application is the national stage of PCT/JP05/04168. The PCT filing date for this application is March 3, 2005 and the PCT 371(c) date is September 6, 2006.

The ‘706 application is the national stage of PCT/JP05/04386. The PCT filing date for the ‘706 application is March 7, 2005 and the PCT 371(c) date is September 6, 2006.

As such, the present application should be considered the earlier-filed of the two applications.

As the ‘706 application has not yet issued as a patent, the double patenting rejection is a “provisional” rejection as stated above. According to M.P.E.P. §804 (I)[B](1) if “provisional” ODP rejections in two applications are the only rejections remaining in those applications, *the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer*” (emphasis added).

Applicants believe that after consideration of the arguments made herein, no other rejection remains in the present application. Since the present application is the earlier-filed application, Applicants respectfully request the ODP rejection be withdrawn and the application advanced to issuance.

Claim rejections under 35 U.S.C. § 102(b)/103a to Furuta

Claims 1, 2, 5, 6, 8 and 13 are rejected under 35 U.S.C. 102(b) as anticipated by or, alternatively, under 35 U.S.C. 103(a) as obvious over United States Patent No. 5,891,532 to Furuta et al. (the '532 Patent). (Office Action p. 3)

See remarks below which addresses this rejection.

Claims 1,2, 5-8 and 10-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, alternatively, under 35 U.S.C. 103(a) as obvious over United States Patent No. 5,759,674 to Furuta et al. (the '674 Patent). (Office Action p. 5)

See remarks below which addresses this rejection.

Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as obvious over the '532 Patent in view of the '674 Patent. (Office Action p. 8)

The rejection alleges that the '532 Patent teaches molded films of a liquid crystal polyester resin composition having the same composition as the claimed materials and which is molded at a temperature between $\pm 60^{\circ}\text{C}$ of the flow-beginning temperature (Column 12, lines 11-14). It is further contended that, as the composition and temperatures are the same, one of ordinary skill in the art would infer that the dielectric loss tangent would be an inherent feature of the material.

The rejection alleges that the '674 Patent teaches laminates of a liquid crystal polyester resin composition laminated on a metal foil having the same composition of the claimed materials. The lamination step allegedly reads on the heat treatment of the claimed invention. Specifically, the rejection notes Example 5 which reads on a polyester having a flow temperature of 324°C which is laminated at 290°C .

As an initial matter, Applicants note that, with regard to the '674 patent, while the rejection has pointed out the flow temperature of the primary component (polyester A-1 : 87%), ***the rejection has not provided the flow temperature of the entire resin composition.*** As such, a *prima facie* case has not been established with regard to the '674 patent.

Nevertheless, as amended, the instant claims recite that the heat treatment is performed in an inert-gas atmosphere under a condition that the residual oxygen concentration is less than 1%.

Neither the '532 Patent nor the '674 Patent teach or suggest performing the purported heat treatment under such conditions. Indeed, the only mention of an inert atmosphere in each case is in the context of a melt-extrusion which would, by definition, be at a temperature higher than the claimed range.

Thus, one of ordinary skill in the art would recognize that the oxygen content of the subsequent materials would likely be significantly higher than the claimed materials which are heat treated in an inert-gas atmosphere. That is to say, unlike the rejection's contention that the "products [are] of identical chemical compositions [and thus] can not have mutually exclusive properties," the claimed materials and the materials of the prior art are not sufficiently identical and thus have different properties.

Indeed, one of ordinary skill in the art would also recognize that the presence of a higher oxygen content would likely dramatically alter the dielectric loss tangent and the peel strength of the resin composition. Applicants contend that these properties of the final product are highly dependent on whether thermal treatment on the resin composition is conducted inside a cylinder of a molding machine during molding, or conducted under a specific condition (other than molding condition) such as inert-gas atmosphere as stated the instant claims after molding.

For example, in a resin kept to undergo thermal treatment inside a cylinder for a long time, epoxy-group containing ethylene copolymers of the resin composition come to aggregate with each other. This aggregation prevents many epoxy groups from reacting with liquid crystal polyester (LCP). Such a resin molded article containing many unreacted epoxy groups will exhibit a high dielectric loss tangent, which is contradicted by the instant claims.

In contrast, thermal treatment on the molded article after molding as in the instant claims accelerates the reaction between the LCP and epoxy-group containing ethylene copolymers, decreasing unreacted epoxy groups, and thereby giving the molded article with a low dielectric loss tangent as claimed. As such, the two thermal treatments described above bring opposite effects on the final product despite any similarity in chemical composition.

In sum, neither the '532 Patent nor the '674 Patent disclose the thermal treatment after molding nor the difference between the above two thermal treatments. As such, neither the '532 Patent nor the '674 Patent anticipate the instant claims. Furthermore, one of ordinary skill in the art would have had no reasonable expectation of success in achieving the results of the instant invention based on the teachings of the '532 Patent alone, the '674 Patent alone or the two

Patents in combination. It is respectfully requested that the rejections be reconsidered and withdrawn.

Claim rejections under 35 U.S.C. § 102(b)/103a to Furuta/Okamoto

Claims 14-19 are rejected under 35 U.S.C. 103(a) as obvious over the ‘674 Patent in view of Patent No. 6,838,546 to Okamoto (“Okamoto”). (Office Action p. 9)

See remarks below which addresses this rejection.

Claims 14-19 are also rejected under 35 U.S.C. 103(a) as obvious over the ‘532 Patent in view of Okamoto . (Office Action p. 11)

The rejection alleges that the ‘674 Patent and the ‘532 Patent disclose printed circuit boards comprising a resin composition layer including an inorganic filler but they each fail to disclose the amount of inorganic filler included in the composition.

It is also alleged that Okamoto discloses an aromatic liquid crystalline composition useful as a printed circuit board which includes a dielectric material (barium titanate or strontium titanate) in an amount of 0.2 to 200 parts by weight based on 100 parts by weight of the aromatic liquid crystal polyester and solvent.

The rejection argues that it would have been obvious to one of skill in the art to utilize the amounts and fillers of Okamoto in circuit boards with the materials of the ‘674 Patent and the ‘532 Patent.

As an initial matter, Okamoto described the amount of dielectric filler as based on 100 parts by weight of the aromatic LCP and solvent. ***As such, the amount claimed based on 100 parts by weight of the LCP alone may be considerably smaller.***

Nevertheless, as described above, as amended, the instant claims recite that the heat treatment is performed in an inert-gas atmosphere under a condition that the residual oxygen concentration is less than 1% and one of ordinary skill in the art would have no expectation of success at arriving at the claimed materials from either the materials of the ‘532 Patent or the ‘674 alone or in combination.

As such, Okamoto does nothing to rectify the deficiencies of the ‘532 Patent and the ‘674 Patent to teach or suggest the claimed compositions.

As such, even if one of ordinary skill in the art were to utilize the amount of filler purportedly described by the rejection, there would still have been no reasonable expectation of success in achieving the results of the instant invention based on the teachings of the '532 Patent or the '674 Patent alone or in combination with Okamoto.

It is respectfully requested that the rejections be reconsidered and withdrawn.

CONCLUSION

In view of the foregoing, reconsideration and withdrawal of all rejections, allowance of the instant application with all pending claims, and passage of the instant application to issuance are earnestly solicited. If a telephone conversation with Applicants' representatives would help expedite the prosecution of the above-identified application, the Examiner is urged to call Applicants' representatives at the telephone number below.

In view of the amendments and remarks made herein, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are respectfully requested. Please charge any required fee or credit any overpayment to Deposit Account No. 04-1105, under Order no. 80089 (302721).

Respectfully submitted,

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